

FEDERAL AID ANNUAL RESEARCH PERFORMANCE REPORT

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF WILDLIFE CONSERVATION
PO Box 115526
Juneau, AK 99811-5526

Alaska Department of Fish and Game Wildlife Restoration Grant

GRANT NUMBER: W-33

SEGMENT NUMBER: 9

PROJECT NUMBER: 7.01

PROJECT TITLE: Develop and evaluate indices for assessing marten population status and trend in Interior Alaska

PROJECT DURATION: 1 July 2010–30 June 2012

REPORT DUE DATE: 1 September 2011

PRINCIPAL INVESTIGATOR: Craig L. Gardner, ADF&G

COOPERATOR: Knut Kielland, University of Alaska Fairbanks

WORK LOCATION: Interior Alaska (upper Kuskokwim River, middle Tanana River, and upper Tanana River)

I. SUMMARY OF WORK COMPLETED THIS SEGMENT ON JOBS IDENTIFIED IN ANNUAL WORK PLAN

OBJECTIVE 1: Determine the value of monitoring gender, young of year (YOY):adult female (AdF) ratios, diet and fecundity (pregnancy rate and blastocysts counts) of harvested marten to predict marten population status and composition for use by area managers and also by trappers to manage their traplines.

Even though this is the first year of this study, we had 3 years of data previously collected to report. During trapping seasons 2006–2007 to 2010–2011, we collected 308–585 marten carcasses that were harvested in 3 distinct areas of Interior Alaska (upper Kuskokwim River, middle Tanana River, and upper Tanana River) by trappers. Each year's sample included total annual catch from 1 to 3 trappers from each of the study areas. Each carcass was sexed and aged as adult or juvenile (based on skull characteristics) and then necropsied. We collected muscle and claw samples to evaluate diet using stable isotope analyses and the uteruses of females ≥ 1 -year old to assess productivity by flushing the uteruses to determine presence and number of blastocysts. By analyzing both muscle and claw samples, we will be able to assess marten diet for different periods of its reproductive cycle and assess if reproductive success can be linked to certain diets. Marten breed during July through August. Fertilization is followed by a period of delayed implantation during which the egg develops into a multi-cellular blastocyst stage. The blastocysts implant during late February–April and birth occurs in April or May. Claws, because they are continually growing, will be used to assess summer and spring prey selection corresponding to birthing and lactation periods and muscle samples for the time nearing implantation. As the study progresses, we will evaluate if marten pregnancy and fecundity

(average count of blastocysts/adult female) rates are an adequate indicator to forecast next year's population status and trend.

JOB/ACTIVITY 1A: Literature review.

Federal funds were used to pay my salary while working on this task. On a monthly basis, I conducted a literature search for information on marten food habits, stable isotope analyses, reproduction, and population trends. I acquired numerous publications that have focused my research questions and improved methodologies.

JOB/ACTIVITY 2: Necropsy marten carcasses.

Federal funds were used to pay my salary while working on this task. I collected and necropsied a total of 308 carcasses (212 males, 96 females) of which 128 were from the upper Kuskokwim (94 males, 34 females), 114 from middle Tanana (68 males, 46 females), and 66 from upper Tanana (50 males, 16 females) river drainages. In total, 5 trappers contributed their entire harvest to the sample.

JOB/ACTIVITY 3: Age structure of harvest.

Federal funds were used to pay my salary to extract and prepare teeth for aging and to pay Matson's Laboratory, LLC to section and age. I sent 300 tooth samples (230 females, 70 males) to Matson's Laboratory for aging. To aid interpretation of relationships between diet and fecundity and fecundity to age, I sent in all samples of adult females and subsampled males based on occurrence in the harvest from the 3 study areas.

JOB/ACTIVITY 4: Stable isotope analyses.

Federal funds were used to pay my salary to collect and catalog samples and to pay the University of Alaska Fairbanks for Dr. Knut Kielland to process the samples. Dr. Kielland is in the process of analyzing about 800 claw and meat samples from marten collected since 2007 from the 3 study areas. We plan to do all the adult females as well a sample of adult males and juveniles.

JOB/ACTIVITY 5: Data analysis and reporting.

Federal funds were used to pay my salary while working on this task. Most of my effort was directed toward analyzing past pregnancy and productivity data. Based on these data, there is some indication that pregnancy data may be a good indicator of the availability of juveniles to trappers the coming year (Fig. 1). In brief, it appears from these data that pregnancy rates in the 60% range indicate that fewer juveniles will be available to trappers as compared to periods when pregnancy rates are higher.

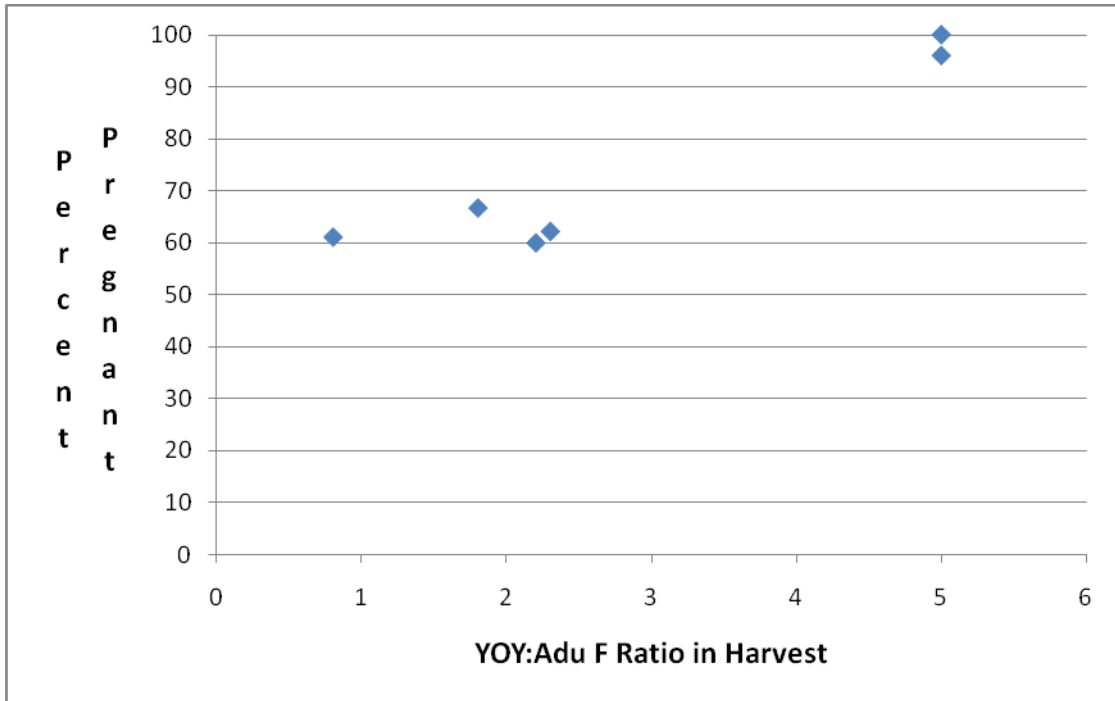


FIGURE 1. Young of year (YOY):adult female ratios relative to the percent pregnant adult females in Interior Alaska 2007–2010.

IV. RECOMMENDATIONS FOR THIS PROJECT

Increase marten carcass sample size from all 3 study areas by adding more contributing trappers. I am in the process of contacting potential trappers to explain the study's needs and their data collection requirements.

PREPARED BY: Craig L. Gardner

DATE: 4 August 2011